

SDS

SDS SERIES AXIAL FLOW FIREPROOF SMOKE EXHAUST FAN(JET FAN)

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Overview of SDS Series Axial Flow Fireproof Smoke Exhaust Fan

A
630mm 1600mm
3500

SDS series jet fan is the new product developed by Shuangyang depending on the results of mechanism research from Shanghai Jiaotong University, and adopted the advanced technology from Japan and Germany. The technology center of Shangfeng is focusing on research and innovation for sustainable development. The company has established wide communication with international enterprises, and taken sufficient research on metro, highway tunnel, railway tunnel, dams project systems, as well as consult with the experts from the corresponding metro design institutes, tunnel design institutes and tunnel engineering enterprises. So the company knows well the application condition of jet fan and accumulates wide experience in technology, quality and application condition. The efficiency and A-weighted noise level of jet fan is better than that of the tradition axial fan. The intention of Shuangyang is to select the jet fan with the best performance, to optimize the various engineering systems and to keep leading position in the domestic industry.

There are 2 types in SDS' uni-direction and reversible (bi-direction) axial fan. The thrust range, up to 3500N, can be covered by fans range from diameter of 630mm to 1600mm. High efficiency and low noise jet fan can be selected under different load and work conditions.

SDS series jet fan has high quality assurance depending on the advanced technology. The casing is forming by spinner. The tip of impeller is processed to make sure the alignment and the tip clearance. The hot dip galvanized surface provide good appearance and excellent anti-corrosive performance. The blades and hub are made of aluminum alloy by high/Low pressure die-casting by casting model which is made by Toshiba CNC. The application of SDS fan in highway tunnel, railway tunnel and dams project has proved that the performance, technical and quality requirement, i.e. anti-corrosive, reliability and economics as well as economic targets, completely meet with the requirement of tunnel and metro.

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	SDS;		SDS (R)	
1: SDS-6.3-a	630mm		2900rpm	7.5KW
2: SDS(R)-6.3-b	630mm		2900rpm	11KW

Remarks

Type SDS: unidirection jet fan; Type SDS(R): reversible jet fan

Example 1

SDS-6.3-a means type SDS jet fan with diameter of 630mm, speed of 2900rpm, motor rating 7.5 kw. 7.5

Example 2

SDS (R)-6.3-b means type SDS (R) reversible jet fan with diameter of 63



- SDS

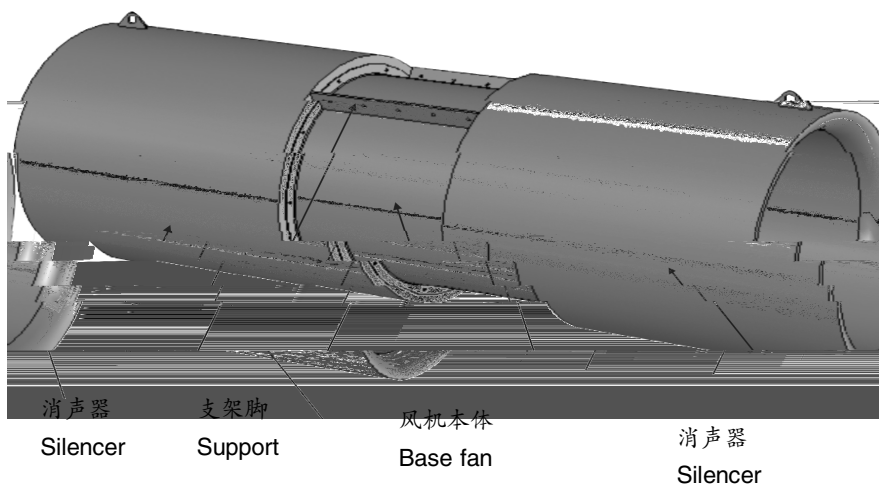
JB/T 10489- 2004

- GB/T 19843- 2005/ISO 13350 1999

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Structural Features of Jet Fan



消声器

Silencer

支架脚

Support

风机本体

Base fan

消声器

Silencer

SDS

SDS(R)

●

●

●

●

SDS

H

IP55

●

SDS R

30

Tunnel fan has two ventilation types, SDS uni-directional jet fan and SDS(R) bi-directional jet fan.

- Base fan, silencer and support are made of steel sheet by CNC automatic welding and machine-processed moulding, and external coating to improve intensity and corrosion protection.
- The number of blades and blade angle is changeable to meet the requirement of tunnel ventilation.
- The length of the silencer normally is one fan diameter, when needed (low noise level), can be up to 2 fan diameters. Silencers are bolted to the fan.
- The motor are of squirrel cage type, totally enclosed with a flange mounting, and are equipped with extended cables connected to a terminal box outside the fan casing. Insulation class H and protection class IP 55 are applied. Motors with grease nipples can be provided with extended grease lines to external grease nipples on the fan casing.
- Switch time of reversible jet fan: Switch time is very important under the emergency conditions. SDS (R) jet fan is available for electric and mechanical methods. To switch the reversible jet fan to reverse to the rated speed would be within 30 seconds.

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Performance Parameter Sheet of SDS Series Unidirectional Axial Flow Fireproof Smoke Exhaust Fan (Jet Fan)

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Fan type	Volume m ³ /s	Outlet air velocity m/s	Motor			Without silencer			With silencer						
			Motor size	Motor rating kW	Fan power kW	Thrust N	Sound pressure level dB(A)	Weight kg	1D			2D			
									Thrust N	Sound pressure level dB(A)	Sound power level dB(A)	Weight (kg)	Thrust N	Sound pressure level dB(A)	Weight (kg)
SDS- 6.3- a	8.1	26.0	132	7.5	6.8	247	78	135	244	68	96	245	239	64	322
SDS- 6.3- b	9.0	28.9	160	11	8.4	305	79	182	302	69	97	292	296	65	369
SDS- 6.3- b	9.9	31.8	160	11	10.1	369	80	182	365	70	98	292	358	66	369
SDS- 6.3- c	10.8	34.7	160	15	12.0	439	81	190	435	71	99	300	426	67	377
SDS- 6.3- c	11.7	37.5	160	15	14.1	513	82	190	508	72	100	300	498	68	377
SDS- 6.3- d	12.7	40.6	160	18.5	17.2	602	84	212	596	74	102	322	584	70	399
SDS- 7.1- a	12.7	32.0	160	15	13.3	475	81	208	470	71	99	338	461	67	433
SDS- 7.1- b	14.0	35.4	160	18.5	16.9	581	82	230	575	72	100	360	564	68	455
SDS- 7.1- c	15.0	37.9	180	22	20.1	666	84	263	659	72	100	393	646	69	488
SDS- 7.1- d	16.0	40.4	200	30	22.9	757	85	323	749	73	101	453	734	71	548
SDS- 7.1- d	17.0	42.9	200	30	25.8	853	86	323	845	75	103	453	828	72	548
SDS- 7.1- e	18.0	45.5	200	37	30.0	960	87	338	950	77	105	468	931	73	563
SDS- 8- a	9.3	18.6	112	4	3.1	204	66	138	202	56	84	310	198	52	435
SDS- 8- b	10.6	21.0	132	5.5	4.2	260	68	163	257	58	86	335	252	54	460
SDS- 8- c	11.8	23.5	132	7.5	5.5	325	69	176	322	59	87	348	315	55	473
SDS- 8- c	12.6	25.0	132	7.5	6.6	368	70	176	364	60	88	348	357	55	473
SDS- 8- d	13.3	26.5	160	11	7.7	413	71	218	409	62	90	390	401	57	515
SDS- 8- d	14.1	28.0	160	11	9.4	461	72	218	457	63	91	390	448	58	515
SDS- 9- a	13.0	20.5	132	7.5	5.4	313	70	232	310	60	88	414	304	56	569
SDS- 9- b	14.6	22.9	160	11	7.1	391	71	274	387	62	90	456	379	58	611
SDS- 9- b	16.1	25.3	160	11	9.1	477	72	274	472	63	91	456	463	59	611
SDS- 9- b	16.7	26.2	160	11	9.9	511	73	274	506	64	92	456	496	60	611
SDS- 9- c	18.8	29.5	160	15	13.1	641	75	295	634	65	93	477	620	61	632
SDS- 9- d	20.1	31.6	180	18.5	16.9	744	76	333	736	67	95	515	722	63	670
SDS- 10- a	17.7	22.5	160	11	9.8	466	72	306	461	63	91	518	452	60	703
SDS- 10- b	19.6	25.0	160	15	11.7	575	73	327	569	64	92	539	558	61	724
SDS- 10- b	21.2	27.0	160	15	13.9	670	75	327	664	66	94	539	650	63	724
SDS- 10- c	23.2	29.5	180	18.5	17.1	800	77	365	792	67	95	577	776	64	762
SDS- 10- d	24.8	31.6	180	22	21.2	884	78	373	875	69	97	585	857	65	770
SDS- 10- e	26.9	34.2	200	30	27.5	1076	79	453	1065	70	98	665	1044	66	850
SDS- 11.2- e	24.8	25.2	180	18.5	17.3	744	77	427	736	68	96	639	722	65	824
SDS- 11.2- a	29.1	29.5	180	22	20.5	996	78	435	979	69	97	647	948	66	832
SDS- 11.2- b	31.1	31.6	200	30	24.6	1150	80	515	1135	71	99	727	1100	68	912
SDS- 11.2- c	32.9	32.4	225	37	33.3	1286	80	529	1270	71	99	741	1240	69	926
SDS- 11.2- d	34.9	35.4	225	45	38.4	1468	81	565	1453	72	100	777	1424	69	962
SDS- 11.2- f	37.4	38.0	250	55	46.2	1691	83	672	1674	73	101	884	1641	70	1069

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Performance Parameter Sheet of SDS Series Unidirectional Axial Flow Fireproof Smoke Exhaust Fan (Jet Fan)

Fan type	Volume m ³ /s	Outlet air velocity m/s	Motor			Without silencer			With silencer						
			Motor size	Motor rating kW	Fan power kW	Thrust N	Sound pressure level dB(A)	Weight (kg)	1D			2D			
									Thrust N	Sound pressure level dB(A)	Sound power level dB(A)	Weight (kg)	Thrust N	Sound pressure level dB(A)	Weight (kg)
SDS-12.5-a	35.0	28.5	225	37	29.8	1185	82	574	1173	72	100	852	1150	70	1137
SDS-12.5-a	38.3	31.2	225	37	34.5	1420	82	574	1406	73	101	852	1378	70	1137
SDS-12.5-b	41.6	33.9	225	45	41.2	1677	83	610	1660	74	102	888	1627	71	1173
SDS-12.5-c	45.2	36.8	250	55	50.8	1976	84	717	1956	76	104	995	1917	73	1280
SDS-12.5-d	48.5	39.5	280	75	66.4	2276	85	852	2254	77	105	1130	2208	74	1415
SDS-12.5-e	51.5	42.0	280	90	81.9	2574	86	957	2548	78	106	1235	2497	74	1520
SDS-12.5-f	23.1	18.8	160	11	8.4	516	69	437	510	60	88	715	500	57	1000
SDS-12.5-g	25.4	20.7	180	15	10.7	625	70	485	619	61	89	763	607	58	1048
SDS-12.5-g	27.6	22.5	180	15	12.3	739	71	485	731	63	91	763	717	60	1048
SDS-12.5-h	29.8	24.3	200	18.5	15.6	861	72	510	853	64	92	788	836	61	1073
SDS-12.5-i	32.2	26.2	200	22	18.9	1001	73	540	991	64	92	818	972	61	1103
SDS-12.5-j	34.5	28.1	225	30	23.7	1152	74	582	1140	66	94	860	1118	63	1145
SDS-14-a	33.6	21.8	200	18.5	16.5	870	73	656	861	64	92	947	844	61	1292
SDS-14-b	36.8	23.9	200	22	18.1	1045	74	686	1035	65	93	977	1014	62	1322
SDS-14-c	39.9	25.9	225	30	24.8	1228	75	728	1215	66	94	1019	1191	64	1364
SDS-14-d	43.1	28.0	250	37	30.2	1435	76	844	1420	68	96	1135	1392	65	1480
SDS-14-e	46.3	30.1	280	45	35.5	1658	77	972	1642	68	96	1263	1609	66	1608
SDS-14-f	49.6	32.2	280	55	45.7	1898	78	1031	1879	69	97	1322	1841	67	1667
SDS-14-g	25.4	16.5	160	7.5	6.1	498	64	581	493	55	83	872	483	52	1217
SDS-14-h	27.7	18.0	180	11	7.7	593	65	620	589	57	85	911	575	54	1256
SDS-14-i	30.0	19.5	200	15	9.9	696	66	686	689	58	86	977	675	55	1322
SDS-14-i	32.5	21.1	225	15	13.5	815	68	686	807	59	87	977	790	57	1322
SDS-14-j	34.6	22.5	225	18.5	15.1	926	68	702	917	59	87	993	899	57	1338
SDS-14-k	37.1	24.1	250	22	19.5	1063	69	728	1052	61	89	1019	1031	58	1364
SDS-16-a	47.2	23.5	225	30	24.1	1320	77	892	1307	68	96	1240	1281	66	1680
SDS-16-b	52.1	25.9	250	37	32.5	1603	78	1008	1587	69	97	1356	1556	67	1796
SDS-16-c	57.1	28.4	280	55	45.6	1928	80	1195	1909	71	99	1543	1870	68	1983
SDS-16-d	61.9	30.8	315	75	56.2	2268	81	1590	2245	73	101	1938	2200	70	2378
SDS-16-d	67.0	33.3	315	75	65.7	2651	82	1590	2624	73	101	1938	2572	71	2378
SDS-16-e	71.8	35.7	315	90	83.5	3046	83	1680	3016	75	103	2028	2956	72	2468
SDS-16-f	35.6	17.7	200	15	10.8	749	69	850	741	61	89	1198	727	58	1638
SDS-16-f	39.2	19.5	225	15	13.2	909	69	850	900	61	89	1198	882	58	1638
SDS-16-g	42.8	21.3	225	22	18.1	1084	71	892	1074	63	91	1240	1052	61	1680
SDS-16-h	46.6	23.2	250	30	24.2	1287	72	1005	1274	64	92	1353	1248	62	1793
SDS-16-i	50.3	25.0	280	37	32.5	1498	73	1120	1479	65	93	1468	1449	63	1908
SDS-16-j	53.9	26.8	280	45	34.6	1717	74	1192	1700	66	94	1540	1666	64	1980

SDS(R)

Performance Parameter Sheet of SDS(R) Series Bidirectional Axial Flow Fireproof Smoke Exhaust Fan (Jet Fan)

Fan type	Volume m ³ /s	Outlet air velocity m/s	Motor			Without silencer			With silencer						
			Motor size	Motor rating kW	Fan power kW	Thrust N	Sound pressure level dB(A)	Weight (kg)	1D			2D			
									Thrust N	Sound pressure level dB(A)	Sound power level dB(A)	Weight (kg)	Thrust N	Sound pressure level dB(A)	Weight (kg)
SDS R -6.3-a	8.9	28.5	132	7.5	6.9	303	79	135	289	70	98	245	274	66	322
SDS R -6.3-b	9.5	29.0	160	11	8.7	346	80	182	330	71	99	292	312	67	369
SDS R -6.3-b	10.2	32.8	160	11	10.4	391	80	182	371	71	99	292	363	67	369
SDS R -6.3-c	10.5	33.7	160	15	12.4	413	81	190	409	72	100	300	401	68	377
SDS R -6.3-c	11.4	36.5	160	15	14.3	495	82	190	482	73	101	300	470	69	377
SDS R -6.3-d	12.3	39.4	160	18.5	17.7	566	83	212	560	74	102	322	549	70	399
SDS R -7.1-a	13.0	32.8	160	15	13.7	497	83	208	481	73	101	338	460	70	433
SDS R -7.1-b	14.2	35.8	160	18.5	17.4	578	84	230	567	74	102	360	549	71	455
SDS R -7.1-c	14.9	37.6	180	22	20.7	626	85	263	620	75	103	393	607	73	488
SDS R -7.1-d	15.5	39.2	200	30	23.6	711	85	323	704	76	104	453	690	73	548
SDS R -7.1-d	16.5	41.6	200	30	26.6	802	86	323	794	77	105	453	778	74	548
SDS R -7.1-e	17.5	44.1	200	37	30.9	902	87	338	893	78	106	468	875	75	563
SDS R -8-a	9.1	18.0	112	4.0	3.2	191	66	138	189	56	84	310	186	52	435
SDS R -8-b	10.6	21.2	132	5.5	4.3	244	68	163	242	58	86	335	237	54	460
SDS R -8-c	11.5	22.8	132	7.5	5.7	306	69	176	302	59	87	348	296	56	473
SDS R -8-c	12.2	24.3	132	7.5	6.8	346	70	176	342	60	88	348	335	57	473
SDS R -8-d	14.1	28.0	160	11	9.7	453	72	218	448	62	90	410	421	59	515
SDS R -8-e	14.7	29.3	160	15	13.4	486	73	241	461	63	91	433	448	60	538
SDS R -9-b	14.1	22.2	160	11	7.3	367	71	274	364	61	89	456	356	57	611
SDS R -9-b	15.6	24.5	160	11	9.3	448	73	274	444	64	92	456	435	60	611
SDS R -9-b	16.2	25.5	160	11	10.2	481	73	274	476	64	92	456	466	61	611
SDS R -9-c	18.8	29.5	160	15	13.5	636	74	295	629	65	93	477	616	61	632
SDS R -9-d	19.7	31.0	180	18.5	17.4	699	75	333	692	66	94	515	678	63	670
SDS R -9-e	21.5	33.8	180	22	20.7	786	76	357	770	67	95	539	754	63	700
SDS R -10-a	7.1	21.8	160	11	10.1	438	74	306	433	64	92	518	425	61	703
SDS R -10-b	19.0	24.3	160	15	12.1	540	75	327	535	65	93	539	524	62	724
SDS R -10-b	20.8	26.5	160	15	14.3	630	76	327	624	67	95	839	611	64	724
SDS R -10-c	22.5	28.6	180	18.5	17.6	752	77	365	745	68	96	577	730	65	762
SDS R -10-d	24.3	31.0	180	22	21.5	831	78	373	822	70	98	585	806	66	770
SDS R -10-e	26.5	33.8	200	30	28.3	1011	79	453	1001	70	98	665	981	66	850
SDS R -11.2-e	24.1	24.4	180	18.5	17.8	699	78	427	682	69	97	639	668	65	824
SDS R -11.2-a	30.0	30.5	180	22	21.1	1005	79	435	985	70	98	647	941	67	832
SDS R -11.2-b	30.5	31.0	200	30	25.3	1130	80	515	1120	71	99	727	981	68	912
SDS R -11.2-c	33.5	34.0	225	37	31.2	1198	81	529	1180	72	100	741	1161	69	926
SDS R -11.2-d	34.5	35.0	225	45	39.6	1380	82	565	1350	74	102	777	1318	70	962
SDS R -11.2-f	36.3	36.9	250	55	47.6	1590	83	672	1550	75	103	884	1519	71	1069

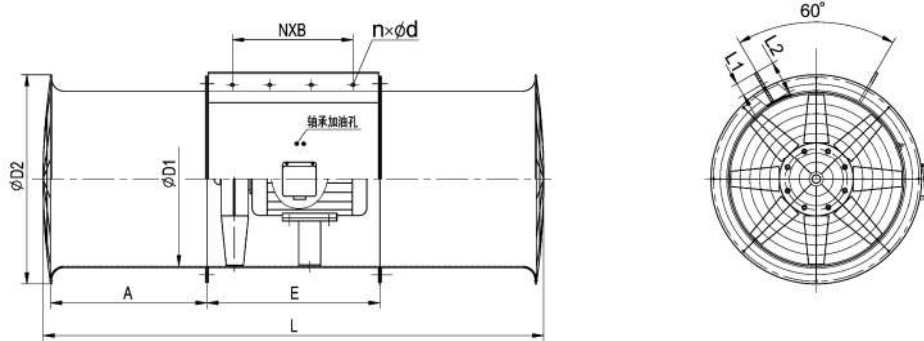
Fan type	Volume m ³ /s	Outlet air velocity m/s	Motor			Without silencer			With silencer						
			Motor size	Motor rating kW	Fan power kW	Thrust N	Sound pressure level dB(A)	Weight (kg)	1D			2D			
									Thrust (N)	Sound pressure level dB(A)	Sound power level dB(A)	Weight (kg)	Thrust N	Sound pressure level dB(A)	Weight (kg)
SDS R - 125-e	36.2	29.5	200	30	27.6	1114	82	543	1153	73	101	821	1136	70	1106
SDS R - 125-a	38.5	31.5	225	37	35.5	1335	82	574	1309	73	101	852	1276	70	1137
SDS R - 125-b	41.1	33.5	225	45	42.4	1576	83	610	1537	75	103	888	1506	72	1173
SDS R - 125-c	43.8	35.7	250	55	52.3	1857	84	717	1811	75	103	995	1775	72	1280
SDS R - 125-d	47.0	38.3	280	75	68.4	2140	85	852	2086	76	104	1130	2045	74	1415
SDS R - 125-f	50.0	40.7	280	90	84.4	2419	86	957	2359	78	106	1235	2312	75	1520
SDS R - 125-g	22.4	18.2	160	11	8.7	485	69	437	473	60	88	715	463	57	1000
SDS R - 125-h	24.6	20.1	180	15	11.0	588	70	485	573	61	89	763	561	58	1048
SDS R - 125-h	26.8	21.8	180	15	12.7	694	71	485	677	62	90	763	663	59	1048
SDS R - 125-i	28.9	23.6	200	18.5	16.1	810	72	510	790	63	91	788	774	61	1073
SDS R - 125-j	31.2	25.4	200	22	19.5	941	73	540	918	64	92	818	899	63	1103
SDS R															



SDS

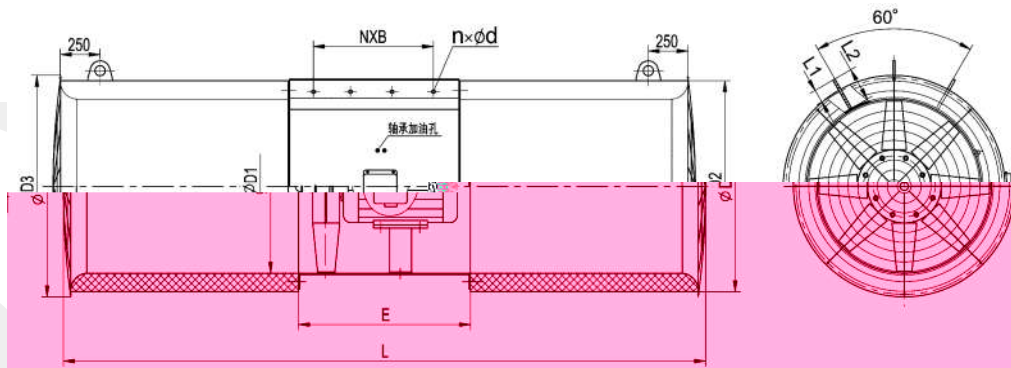
Overall Dimension of SDS Series Axial Flow Fireproof Smoke Exhaust Fan (Jet Fan)

Without silencer



Size	D1	D2	A	E	N × B	L1	L2	L	n × d
6.3	640	740	310	600	3 × 180	50	100	1270	4 × 18
7.1	720	830	320	640	3 × 200	50	100	1280	4 × 18
8.0	810	930	350	640	3 × 190	50	100	1340	4 × 18
9.0	910	1060	390	640	4 × 160	60	150	1420	5 × 18
10.0	1010	1160	450	640	4 × 160	60	150	1540	5 × 18
11.2	1130	1400	460	640	4 × 180	80	180	1560	5 × 18
12.5	1260	1530	460	900	4 × 200	80	180	1890	5 × 20
14.0	1410	1690	500	1000	4 × 225	100	200	2100	5 × 26
16.0	1610	1890	600	1000	4 × 225	100	200	2300	5 × 26

With silencer



Size	D1	D2	D3	E	N × B	L1	L2	L		n × d
								1D	2D	
6.3	640	780	788	600	3 × 180	50	100	1910	3170	4 × 18
7.1	720	920	928	640	3 × 200	50	100	2120	3540	4 × 18
8.0	810	1010	1018	640	3 × 190	50	100	2300	3900	4 × 18
9.0	910	1110	1118	640	4 × 160	60	150	2500	4300	5 × 18
10.0	1010	1210	1218	640	4 × 160	60	150	2700	4700	5 × 18
11.2	1130	1330	1338	640	4 × 180	80	180	2950	5190	5 × 18
12.5	1260	1460	1468	900	4 × 200	80	180	3470	5970	5 × 20
14.0	1410	1630	1640	1000	4 × 225	100	200	3900	6700	5 × 26
16.0	1610	1850	1860	1000	4 × 225	100	200	4300	7500	5 × 26

SDS

Inspection and Test for SDS Series Axial Flow Fireproof Smoke Exhaust Fan (Jet Fan)

-
-
- (0)
- 45° 10m
- (N) (kW)
- Thrust test: Thrust test device
- High temperature fire fighting test is performed by China Certificatin Center for Fire Products Ministry of Public Security.
- Noise test: Noise measurements are carried out in free field conditions at about zero ambient air velocity for jet fan with or without silencer. The jet fan sound pressure level is tested at 10m distance, 45 degree from the fan axis.
- Efficiency of a jet fan is defined and tested as thrust (N) and motor power input (kW).

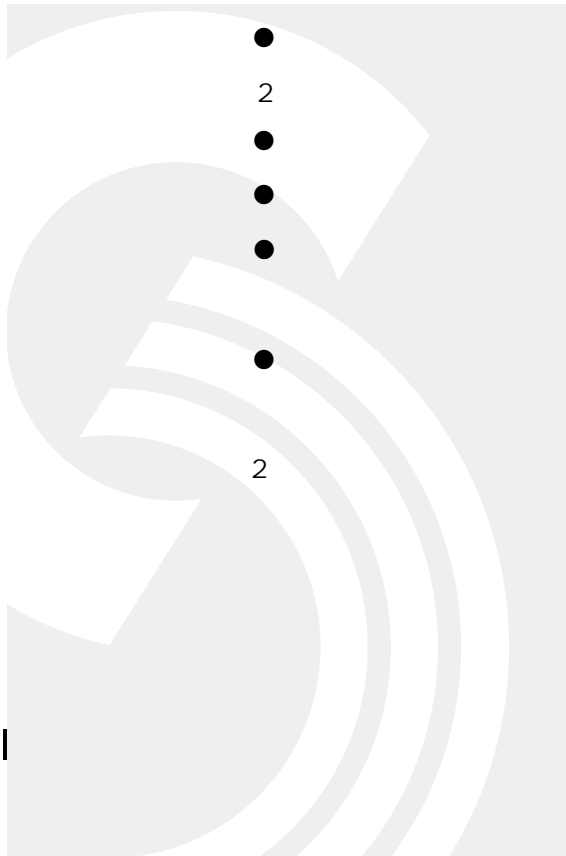
SDS

Commissioning and Operation for SDS Series Axial Flow Fireproof Smoke Exhaust Fan (Jet Fan)

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- 380V ± 6%
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- 10 30

2



.After installation of fan, the following items shall be carefully inspected before start

- The voltage shall be in normal range (generally, 380V, $\pm 6\%$), and 3- phase currents in general balance
- Inspect the clearance of impeller and casing if it is meeting the requirement. Wheeling the impeller by hand for sure that there shall be no touch or friction
- Inspect and remove if there is any foreign particle in fan unit or in vicinity of the fan
- Spot running motor for trial, check the fan impeller rotating direction is the same as the direction signed on fan name plate or not, if not, switch- off first, exchange 2 phases and then to re- trial run
- Inspect the motor rating speed if it is correspond with the fan rating speed
- Inspect the wiring of ground lead and current protector (fuse) in term of the requirement
- The commissioning shall not be start until all items above checked out. Switch off and stop the fan at once for inspection in case of violent vibration.
- If everything is normal, stop the fan after 10-30min in trial running, inspect the bolts in impeller which shall be no loose. After checkout, the fan can be start for normal operation.

.In normal operation, firstly, monitor the motor current, as it is the signal of fan load and the prediction of failures as well; secondly, regularly inspect the vibration of fan and motor if there is abnormal sound of friction or collision.

.In normal operation, the fan shall be stopped at once for inspection or repair if one or more following cases happened:

- The current suddenly rise exceeding the regulation
- The violent vibration or colliding sound happened
- The motor bearing temperature rise quickly.

Maintenance

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- 20000 2
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● Notice that always cut off the power supply to the fan when carrying any work on the fan, and put a label with prominent sign of " In Processing! Do Not Switch On!" for safety. Ensure that more than 2 persons are at work site.

- Inspect the fan for damage every 6 months. Repair damages on the paint of the motor and fan.
- After 200000 hours running, or in 2 year duration, the bearing shall be lubricated.
- The fan shall be kept clean. Every 6 months clean the fan with brush or vacuum clean machine.
- Notice that dust accumulation will cause vibration increase, poor motor cooling and degradation of silencing.

Water spray on silencer is prohibited.

